





FIG. 3

Operator	Rank		
a*b			
a+b			
a-b			
a.*b			
a.^b			
a./b			
a.\b			
a==b			
a~=b	** **		
a <b< td=""><td>$\max(R(a),R(b))$</td></b<>	$\max(R(a),R(b))$		
a>b .			
a<=b			
a>=b			
a&b			
alb			
a/b			
a\b			
[a, b]			
[a; b]			
+a			
-a ~-a	R(a)		
~a			
a',			
a.' c(:) ← a	D(s)		
c(:) ← a a b	R(c)		
a(:)	2		
rand	2		
a:b			
rand(a, b)	2		
ones(a, b)			
a(e)	R(e)		
$\mathtt{a}(e_1,e_2,\ldots,e_n)$	10(0)		
$rand(e_1, e_2, \ldots, e_n)$	n		
ones (e_1, e_2, \ldots, e_n)	,,		
$c(e) \leftarrow a$	$\max(R(a),R(c))$		
$c(e_1,e_2,\ldots,e_n) \leftarrow a$	$\max(n, R(c))$		
- 101,023, 0N) (a	~ IIIan(16, 16(C)).		

FIG. 4

-MATLAB Expression	Shape Expression	<u>θ</u> (e)	u		
a*b	s⊛t	$egin{aligned} & \overline{ heta}(a)\overline{ heta}(b)(1-(1-\overline{lpha}(a))\ & (1-\overline{lpha}(b))(1-\overline{eta}(a)\overline{eta}(b)\ & \delta(\Psi s \Psi \Gamma_1 - t\Gamma_1))) \end{aligned}$	$(1-\overline{\theta}(e))\pi^* + \overline{\theta}(e)(s^*\overline{\alpha}(b) + t^*\overline{\alpha}(a)(1-\overline{\alpha}(b)) + (s^*\Gamma_1 + t^*\Gamma_2 + \mathbf{I} - \Gamma_1 - \Gamma_2)(1-\overline{\alpha}(a)) $ $(1-\overline{\alpha}(b)))$		
a+b a-b a.*b a.^b a./b a.\b a==b a~=b a <bar>b</bar>	$s\oplus t$	$\overline{ heta}(a)\overline{ heta}(b)(1-(1-\overline{lpha}(a))\ (1-\overline{lpha}(b))(1-\delta(s-t)))$	$(1-\overline{ heta}(e))\pi^*+\overline{ heta}(e)(s^*\overline{lpha}(b)+\ t^*(1-\overline{lpha}(b)))$		
a<=b a>=b a&=b a&b a b +a -a	ls	0 (a)	8*		
a"b	8 ⊙t	$egin{aligned} & \overline{ heta}(a)\overline{ heta}(b)(1-(1-\overline{lpha}(a)\overline{eta}(b)) \ & \delta(t\Gamma_1-\Psi t\Psi\Gamma_1)) \ & (1-\overline{lpha}(b)\overline{eta}(a)\delta(s\Gamma_1-\Psi s\Psi\Gamma_1))) \end{aligned}$	$(1-\overline{ heta}(e))\pi^*+\overline{ heta}(e) \ (s^*\overline{lpha}(b)+t^*(1-\overline{lpha}(b)))$		
a'. a.'	~ a	$\overline{oldsymbol{eta}}(a)$	$(1-\overline{ heta}(e))\pi^*+\overline{ heta}(e)\Psi s^*\Psi$		
a/b	s⊘t	$\overline{\theta}(a)\overline{\theta}(b)(1-\overline{\alpha}(b))(1-\overline{\alpha}(a)) \ (1-\overline{\beta}(b)))(1-\overline{\beta}(a)\overline{\beta}(b)) \ \delta(s\Gamma_2-t\Gamma_2)$	$(1 - \overline{\theta}(e))\pi^* + \overline{\theta}(e)(s^*\overline{\alpha}(b) + t^*(1 - \beta(b)) + (s^*\Gamma_1 + I - \Gamma_1 - \Gamma_2 + \Psi t^*\Psi \Gamma_2)(1 - \overline{\alpha}(b))\beta(b)$		
a/b	sót	$\overline{ heta}(a)\overline{ heta}(b)(1-\overline{lpha}(a))(1-\overline{lpha}(b)) \ (1-\overline{eta}(a)))(1-\overline{eta}(a)\overline{eta}(b) \ \delta(s\Gamma_1-t\Gamma_1)$	$(1-\overline{\theta}(e))\pi^* + \overline{\overline{\theta}}(e)(t^*\overline{\alpha}(a) + s^*(1-eta(a)) + (\Psi s^*\Psi \Gamma_1 + \mathbf{I} - \Gamma_1 - \Gamma_2 + t^*\Gamma_2)(1-\overline{\alpha}(a))eta(a)$		
[a; b]	8 ⊕ t	$\overline{ heta}(a)\overline{ heta}(b)\delta(s(\mathbf{I}-\mathbf{\Gamma_1})-t(\mathbf{I}-\mathbf{\Gamma_1}))$	$\frac{(1-\overline{\theta}(e))\pi^* + \overline{\theta}(e)}{(s^* + t^*\Gamma_1)}$		
[a, b]	s⊖t	$\overline{ heta}(a)\overline{ heta}(b)\delta(s(\mathbf{I}-\mathbf{\Gamma_2})-t(\mathbf{I}-\mathbf{\Gamma_2}))$	$(1-\overline{\theta}(e))\pi^* + \overline{\theta}(e) $ $(s^*\Gamma_2 + t^*)$		

FIG. 5

Shape-Tuple Class Operator	Identity	Associativity	Commutativity	Idempõtent Law
*	i	X	×	X
	i	1	1	1
≥	-	_	-	
0	i	1	1	X
-	-		-	-
0	X	X	X	X
. 0	X	X	X	X
©	×	1	1	X
θ	×	1	1	X

FIG. 6